

REMARKS

In the Office Action mailed April 8, 2003, an objection was made to the drawings. Claims 4–6, 8 and 9 were rejected under 35 U.S.C. § 102(e) over U.S. Patent No. 6,004,863 to *Jang*, claims 4–10 were rejected under 35 U.S.C. § 103(a) over U.S. Patent No. 5,851,899 to *Weigand*, and claims 7 and 10 were rejected under 35 U.S.C. § 103(a) over *Jang*, in further view of U.S. Patent No. 5,969,425 to *Chen*. Claims 4–10 were also rejected under 35 U.S.C. § 101 over U.S. Patent No. 5,958,795 for “same invention” type double patenting. Finally, claims 4–10 were rejected under obviousness-type double patenting over U.S. Patent No. 6,169,012 and claims 4, 6 and 8 over U.S. Patent No. 6,486,040.

The Office Action also erroneously stated that claims 4–8 are pending in the application, and the claims have an effective filing date of May 11, 1998. See Office Action, page 2, lines 1–3. In fact, claims 4–10 are pending and the application claims a priority filing date back to Taiwan Application No. 87105966 filed April 18, 1998. The Office is referred to U.S. Patent Application No. 09/075,618, filed May 11, 1998, where the priority claim to the original Taiwanese application was perfected.

Reconsideration and withdrawal of the objection and rejections is respectfully requested in view of the amendment and remarks. Support for the amendment to the specification is found in the drawings and no new matter has been added. Claims 4–10 remain pending in the application.

A. Objection to the Drawings

The drawings were objected to for failing to comply with 37 C.F.R. § 184(p)(5) because Fig. 1D included reference number “24” and Fig. 2E included reference number “48c” that were not listed in the specification. The specification has been amended to include these reference numbers and withdrawal of the objection is requested.

B. Rejection of Claims 4–6, 8 and 9 under § 102(e)

Claims 4–6, 8 and 9 were rejected under 35 U.S.C § 102(e) over U.S. Patent No. 6,004,863 to *Jang*. This rejection is traversed on the ground that *Jang* does not qualify as prior art under § 102(e) in the present application.

In the Preliminary Amendment filed November 21, 2001 with this application, the specification was amended to claim priority to U.S. Patent Application Serial No. 09/535,251, filed March 27, 2000, which was a continuation-in-part of U.S. Patent Application Serial No. 09/075,618, filed May 11, 1998, *which claimed priority from Taiwan Application No. 87105966, filed April 18, 1998*. A certified copy of the Taiwanese priority application was filed in U.S. Patent Application Serial No. 09/075,618.

Jang was filed May 6, 1998, after the April 18, 1998 filing date of Taiwanese priority application and therefore does not qualify as prior art under § 102(e). Accordingly, withdrawal of the rejection of claims 4–6, 8 and 9 under 35 U.S.C. § 102(e) over *Jang* is requested.

C. Rejection of the Claims under § 103(a) over Weigand

Claims 4–10 were rejected under 35 U.S.C. § 103(a) over U.S. Patent No. 5,851,899 to *Weigand*. This rejection is traversed on the ground that, far from suggesting the present invention, *Weigand* actually teaches away from it.

In order to establish a *prima facie* case of obviousness there must be some suggestion or motivation to modify the reference to make the claimed invention. See MPEP § 2143. In this case, independent claims 1 and 8 both include the limitation of “forming a silicon nitride layer on a substrate.” While *Weigand* notes that some prior art methods of forming integrated circuit structures used silicon nitride in etch stop layers, an object of *Weigand* is to get rid of these layers because of their added complexity and cost:

The use of additional etch stop layers has advantageously enabled the production of integrated circuit

structures with highly planarized surface topographies. However, this advantage is achieved at a cost. The additional etch stop layers require additional processing steps to form, thus invariably reducing the efficiency while adding to the overall cost of integrated circuit production.

It is therefore an object of the present invention to provide an improved process flow which fills the STI trenches without gaps and which uses a planarization scheme that does not require complex processing steps or the addition of etch stop layers.

See *Wigand*, column 3, lines 37–47 (emphasis added).

Wigand clearly teaches away from forming a silicon nitride layer. The reference provides absolutely no suggestion or motivation to form a silicon nitride layer on a substrate like the present invention. Accordingly, withdrawal of the rejection of claims 4–10 under 35 U.S.C. § 103(a) over *Wigand* is requested.

D. Rejection of Claims 7 & 10 under § 103(a) over Jang in view of Chen

Claims 7 and 10 were rejected under 35 U.S.C. § 103(a) over *Jang* in view of U.S. Patent No. 5,969,425 to *Chen*. This rejection is traversed because, as discussed above, *Jang* does not qualify as prior art in the present application.

Jang can only be applied as prior art under § 103(a) if the reference qualifies as prior art under § 102(e). Since *Jang* does not qualify as prior art under § 102(e), the rejection of claims 7 and 10 under 35 U.S.C. § 103(a) over *Jang* in view of *Chen* is improper and should be withdrawn.

E. Rejection of the Claims under § 101

Claims 4–10 were rejected under 35 U.S.C. § 101 for “same invention” type double patenting over U.S. Patent No. 5,958,795 to *Chen et al.* Because claims 4–10 and the claims in *Chen* have different scopes, they do not claim the “same invention” and withdrawal of the rejection is requested.

The following marked-up claim 1 of *Chen* shows where the claim differs from claim 4 of the present invention:

1. A method of chemical-mechanical polishing for forming a shallow trench isolation, wherein a substrate having a plurality of active regions, including a large active region and a small active region, is provided, comprising:
 - forming a silicon nitride layer on the substrate;
 - forming a shallow trench between the active regions;
 - forming an oxide layer over the substrate, so that the shallow trench is filled therewith;
 - removing the oxide layer on a central part of the large active region ~~to expose the silicon nitride layer therewithin~~, whereas the oxide layer remains on an edge part of the large active region and on the small active region; and
 - planarizing the remaining oxide layer until the oxide layer within the shallow trench has substantially the same level as the silicon nitride layer.

As shown above, claim 4 of the present invention omits language found in claim 1 of *Chen* that describes exposing a silicon nitride layer during the step of removing the oxide layer on the central part of the large active region. This difference occurs in the body of claim 4 and changes the scope of the claim. There is a similar difference between claim 5 in *Chen* and claim 8 of the present invention where the step of "forming a partial reverse active mask on the oxide layer" does not include exposing the oxide layer on the central part of the large active region.

Thus, because claims 4 and 8 of the present invention and claims 1 and 5 of *Chen* have different scopes, they are not the same invention. Accordingly, withdrawal of the rejection of claims 4–10 under 35 U.S.C. § 101 for "same invention" type double patenting over *Chen* is requested.

F. Rejection of the Claims under obviousness-type Double Patenting

Claims 4–10 were rejected under obviousness-type double patenting over U.S. Patent No. 6,169,012, and claims 4, 6 and 8 were additionally rejected over U.S. Patent No. 6,486,040. Enclosed herewith is a Terminal Disclaimer which complies with the requirements of 37 C.F.R. § 1.321(b)-(c) and withdrawal of the rejection of claims 4–10 under obviousness-type double patenting is requested.

G. Conclusion

In view of all of the above, claims 4–10 are believed to be allowable and the case in condition for allowance, which action is respectfully requested. Should the Examiner be of the opinion that a telephone conference would expedite the prosecution of this case, the Examiner is requested to contact the attorney at the telephone number listed below.

A fee of \$110.00 for the Terminal Disclaimer is enclosed with the response and no other fees are believed to be required. Should any additional fees be required, please charge Deposit Account 50-1123. Should any extension of time be required, please consider this a petition therefore and charge the required fee to Deposit Account 50-1123.

08 Aug 2007
Date



William J. Kubida, Reg. 29,664
Hogan & Hartson L.L.P.
1200 17th Street, Suite 1500
Denver, Colorado 80202
Telephone: (719) 448-5909
Facsimile: (303) 899-7333